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RESTRICTED

REPORT

of the

Army Field Forces

Board No. 3

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FORT BENNING, GEORGIA

Project No. 2288

LAUNCHER, ROCKET, REPEATING, 2.36", T112 (DRUM TYPE)

Date JUN 12 1950

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ARMY FIELD FORCES BOARD NO. 3
Fort Benning, Georgia

JUN 12 1950

REPORT OF TEST OF PROJECT NO. 2288

LAUNCHER, ROCKET, REPEATING, 2.36" T112 (DRUM TYPE)

1. Authority:

a. Par 2, 4th Ind, to Letter, File ATDEV 471 (GN), OCmFF, subject: "Launcher, Rocket, Repeating, 2.36", (Drum Type)," dated 6 Dec 1949. (Appendix A)

b. Purpose:

(1) To determine if there is a requirement for a 2.36" repeating rocket launcher.

(2) To determine if the T112 2.36" repeating rocket launcher meets this requirement.

(3) To determine if there is a requirement for a 3.5" repeating rocket launcher or, at least, a sufficient possibility of a requirement to warrant test of the T115 3.5" repeating rocket launcher.

2. References:

a. Letter, Subject, "Tentative Design for Rapid Fire Magazine for Rocket," Training Battalion, Camp Howze, Texas, 6 March 1945 with 9 Indorsements.

b. Letter, File 471.94, Army Ground Forces Board No. 3, subject: "Semi Automatic Rocket Launcher, 2.36", dated 5 January 1946.

c. OCM 30324

d. OCM 30427

3. Description of Materiel:

a. The Launcher, Rocket, Repeating, 2.36", (Drum Type), is capable of launching a maximum of four type T59E3, M7A3, or M7A3 modified rockets at a rate of fire governed by the speed of hand operation.

b. Rocket ammunition is loaded by hand into the four separate chambers of the drum, and fired electrically with current provided by a combination trigger and hand generator. The drum is rotated by hand operation of a lever. The launcher can not be fired until the firing chamber is indexed to the barrel and latched in place. This indexing and latching is positive and automatic as long as ammunition remains in the drum. The launcher is designed to be fired from the Mount, Tripod, MG Caliber .30 M1917A1 or a vehicular machine gun mount.

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c. Physical Characteristics:

(1) Weight

(a) Launcher, complete - 41 pounds

(b) Caliber .30, M1917A1 tripod - 52 pounds

(2) Weight of launcher sub-assemblies

(a) Body assembly - 16 pounds

(b) Barrel and barrel extension - 6 pounds

(c) Drum assembly - 19 pounds

(3) Dimensions of launcher (without tripod)

(a) Overall length - 74 3/4 inches

(b) Overall width - 14 5/8 inches

(c) Overall height - 14 1/8 inches

(d) Length of tube - 72 inches

4. Background:

a. On 6 March 45 Cpl Authur E. Brown, Co. A, 46th Inf Training Bn, Camp Howze, Texas, (ref 2a) submitted thru channels a tentative design for a magazine-fed rapid fire rocket launcher. Study by The Infantry Board revealed numerous deficiencies in the original drawings.

b. A study was instituted, and on 5 Jan 46 a letter report was forwarded to Army Ground Forces (ref 2b) recommending that a semi-automatic rocket launcher, 2.36", be developed primarily for vehicular transportation and/or mounting and that the requirement for a 2.36" semi-automatic rocket launcher as a primarily man carried weapon be eliminated.

c. OCM 30324 (ref 2c) recommended that a project be initiated to develop vehicular semi-automatic rocket launchers, 2.36", for both vehicular and ground firing.

d. OCM 30427 (ref 2d) approved the recommendations in ref 2c.

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5. Summary of Tests:

a. Test No. 1 - Crew Requirements for Ground and Vehicular Operation. (Appendix C-1)

The T112 was put into action and fired from both ground and vehicular machine gun mounts. A minimum of two men were required, the gunner and loader, however the addition of a third man to unpack and handle ammunition made for more effecient operation.

b. Test No. 2 - Ease and Speed of Mounting. (Appendix C-2)

The T112 was mounted on both ground and vehicular machine gun mounts five times. The launcher was very easy to mount, an average of 57 seconds being required using the M1917A1 tripod and 40 seconds using the vehicular machine gun mount.

c. Test No. 3 - Transportability by Hand. (Appendix C-3)

The T112 was displaced forward 50, 100, 150 and 200 yards while mounted on both M1917A1 and T113E1 tripods. The launcher with ammunition and mount was broken down into the most desirable component parts and hand carried three miles across country and on unimproved roads.

No difficulties were encoun ered in hand carrying the launchers or displacing them forward with either type of mount. When displacing forward 50 yards or less two men were adequate, for distances over 50 yards three men were more desirable in order to conserve the crew's strength and increase the speed of displacement.

For transporting the T112 by hand for distances greater than 1/2 mile the following table shows the most desirable crew, the recommended breakdown of components, and the resultant individual weight loads when equipped with the Rocket, 2.36", T59E3.

Crew Members	Duty	Equipment	Approximate individual weight loads
No. 1	Gunner	2 rds of ammo tripod (minus cradle)	44.3 pounds
No. 2	Asst Gunner & Loader	Cradle and 2 rds ammo	34.3 pounds
No. 3	Crew Member	Launcher (minus barrel extension) with pintle	40.1 pounds
No. 4	Ammo Bearer	Barrel Extension 6 rds ammo	40.9 pounds
No. 5	Ammo Bearer	6 rds ammo	38.4 pounds
Total Crew Five Men		Total Rds 16	Total Weight 198 pounds

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When the lightweight tripod T113E1 was used in place of the M1917A1 tripod the total weight was reduced by approximately twenty eight pounds.

d. Test No. 4 - Transportability and Ability to Fire From 1/4 T Vehicle. (Appendix C-4)

The T112 was mounted on and transported by 1/4 ton vehicle for fifty miles across country and on unimproved roads. The launcher was then fired from the 1/4 ton vehicle.

No damage was incurred from transporting by vehicle. No changes in firing procedure were required; however, the wind shield of the vehicle had to be latched down for safety purposes.

e. Test No. 5 - Functioning. (Appendix C-5)

This test was conducted concurrently with all firing tests. In addition, two launchers were each fired a minimum of 500 rounds. Repeating fire was simulated for 2000 cycles of the drum after which an additional 100 rounds were fired.

(1) In loading it was difficult to engage the detent in the groove of the rocket fin assembly. Rockets frequently slipped forward past the groove of the assembly, which necessitated pushing the rocket completely through the chamber and repeating the loading procedure.

(2) Frequently rockets would not fire; this was caused by the exposed portion of the squib wire touching the body casting which caused a short circuit.

(3) The generator generated electricity upon release of the trigger. This caused rockets to be fired unexpectedly, especially during rapid fire.

(4) In order to elevate and depress, when firing at moving targets, the body casting had to be modified slightly to prevent it from hitting the cradle of the M1917A1 tripod.

(5) Two rockets would fire simultaneously under each of the following conditions:

(a) After loading, when the squib wire of one rocket was touching the squib wire of another rocket and current was generated with either of above rocket chambers in firing position.

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(b) When during loading the squib wires of two rockets were inadvertently wrapped around either of the two contact posts of one chamber and current was generated with above chamber in firing position.

(c) When the chambers were loaded and squib wires of previously fired rockets left wrapped around a contact post touched a squib wire of another rocket and current was generated in either of above rocket chambers in firing position.

(6) The body casting pintle mounting lugs had to be cut off approximately 1/4 of an inch in order to mount the launcher on the Mount, Tripod, Lt. Wt., Caliber .30, T113E1.

(7) The obturating sleeves did not function properly.

f. Test No. 6 - Accuracy. (Appendix C-6)

A ten round shot group was fired at a 10' x 10' vertical panel at each of the following ranges, 100, 150, and 200 yards. The Launcher, Rocket, 2.36", M18, was used as the comparative item. Both types of launchers were mounted on the M1917A1 machine gun mount. The maximum horizontal and vertical dispersion and the mean radii of the shot groups were computed and compared.

Range Yards	Max Horz Disp T112	Max Horz Disp M18	Max Vert Disp T112	Max Vert Disp M18	Mean Radii T112	Mean Radii M18
100	25 in	38.5 in	37 in	35 in	11.9 in	17.35 in
150	50 in	69 in	22 in	34.5 in	15.5 in	22.65 in
200	37.5 in	58.5 in	37.5 in	54.5 in	17.45 in	21.15 in

The maximum horizontal and vertical dispersion was less at all ranges with the T112 with the exception of the vertical dispersion at 100 yards where the M18 was 2 inches less.

The mean radii of the T112 was less than the M18 at all ranges.

g. Test No. 7 - Percentage of Hits on a Moving Tank Target. (Appendix C-7)

(1) The following courses were fired five times each by five gunners each gunner firing both the T112 and the M18 which was used as the control item.

(a) Straight course (head on with respect to gunners) range decreasing from 200 to 50 yards. (Course No. 1)

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(b) Straight crossing course, length of run 150 yards, with firing position in the center and 100 yards from target run. Firing range varying from 100 to 125 yards. (Course No. 2)

(2) The speed of the tank was a constant 10 mph however the speed and range of the tank was unknown to firing personnel. The number of rounds that the gunner could fire during the target runs was unlimited. (Running time 31 seconds).

(3) The number of rounds fired and the percentage of hits were as follows:

Course No. 1				Course No. 2			
No Rds Fired		% of Hits		No Rds Fired		% of Hits	
M18	T112	M18	T112	M18	T112	M18	T112
95	97	59%	66%	95	98	62%	81%

The T112 was fired from the M1917A1 tripod and the M18 from the standing position.

h. Test No. 8 - Rate of Fire For First Minute. (Appendix C-8)

The T112 was fired at a 9' x 6' target at 100 yards range as fast as possible for one minute by five different trained gun crews (3 men). The T112 was loaded before test began and was fired from the M1917A1 tripod. The M18 launcher was used as the control item and was fired from the standing position.

The time required to fire the first four rounds, time to reload, and the number of hits were recorded. The rate of fire for the 1st minute was computed from the average of the number of rounds fired by the five crews.

	Average No Rds Fired in the 1st Minute	Hits	Average Time to Fire 1st 4 Rds	Average Time to Reload
T112	9.6	9.5	5.6"	22.6"
M18	9.4	9.2	*	*

* The time to aim and fire one round from the M18 was from two to three seconds, reloading required from three to four seconds.

i. Test No. 9 - Stability. (Appendix C-9)

The T112 was mounted on the M1917A1 tripod and ten rounds each fired at ranges of 100, 150 and 200 yards. After each round fired the number of mils, both horizontal and vertical, that were required to relay the launcher to its original position were recorded.

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The launcher was very stable in that no adjustments were required to relay the launcher after a round was fired.

j. Test No. 10 - Time and Number of Rounds Required to Obtain Hits on Stationary Targets. (Appendix C-10)

The T112 was mounted on the M1917A1 tripod with the cradle elevating and traversing clamps loosened. The sight range indicator was set for either 0 or 600 yards. Five 6 ft. x 6 ft. panel targets were placed in a semi circle, in relation to the launcher, at ranges unknown to the gun crew. The launcher was loaded and a fire order given. The time required to fire the first round, to secure the first hit, to fire four rounds, and the number of hits were recorded. Eight four round groups were fired; 3 at the target at 195 yards, 2 at the target at 140 yards, one each at the targets at 155, 110, and 105 yards.

Range	Average time to fire first round	Average time to obtain first hit	Average no. of hits	Average time to fire 4 rds
Average 154 yds	10.7 seconds	12.5 seconds	3.3/	22.6 seconds

k. Test No. 11 - Type Emplacement Required in Defensive Position. (Appendix C-11)

With representatives of the Infantry School the most suitable type of emplacement was determined to be a modified Cal. .30 heavy machine gun emplacement. The maximum elevation and consequent range and the maximum traverse permitted by this type emplacement was determined by firing. The launcher could be elevated 300 mils thus giving a range of approximately 400 yards. The launcher could be traversed and fired through 180°, and in cases of emergency 360°.

l. Test No. 12 - Air Drop. (Appendix C-12)

The T112 with M1917A1 tripod was packed in an M-8 equipment container and dropped by parachute from a C-82 aircraft from a height of 1000 feet. The launcher was examined for damage and fired after the drop. The launcher functioned perfectly and no damage was done to either the launcher or tripod.

m. Test No. 13 - Safety Procedures. (Appendix C-13)

This test was conducted during all firing tests by observation to determine crew safety procedures. The trigger generates electricity upon release as well as when it is pulled; therefore, personnel should be taught to release the trigger immediately after it has been pulled.

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When one or more squib wires are touching each other and either rocket is fired, two or more rockets will fire simultaneously. This is very dangerous and personnel must be taught to check carefully when loading to prevent squib wires from touching each other.

n. Test No. 14 - Durability Under Normal Field Conditions and Extreme Temperatures. (Appendix C-14)

The T112 was observed during all tests for normal durability. The devices were cold and hot soaked for 72 hours at -40°F and +120°F respectively and fired immediately after removal from hot and cold rooms.

(1) During tests for normal durability both obturating sleeve guides on one launcher broke off after being fired 500 times.

(2) The operating handles of two launchers broke off, one on a launcher never fired and the other on a launcher fired 500 times followed by simulated fire 2000 times and then fired an additional 19 rounds.

(3) One detent housing spring broke after approximately 60 rounds had been fired through the chamber. Cold and hot soaking the launchers had no apparent effect as no difficulty was encountered in firing the launcher.

o. Test No. 15 - Functioning After Being Subjected to Adverse Conditions. (Appendix C-15)

The launcher and its working parts were covered with dust after which the gunner brushed away by hand sufficient dust to permit loading and clearance for the rocket. Four rounds were then fired with the launcher.

This procedure was repeated with sand and mud.

The launcher was also soaked in a 5% solution of salt water for 4 hours and fired.

The obturating sleeve would not function properly after being subjected to dust, sand and wet muddy conditions unless pressure was applied with the finger tips to open the sleeve after it was closed. Considerable difficulty was encountered in closing the sleeve far enough to release the safety switch so as to complete the electrical circuit.

Soaking the device in salt water had no apparent effect as it functioned correctly after soaking. No rust was observed.

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p. Test No. 16 - Requirement for a 2.36" or a 3.5" Repeating Rocket Launcher. (Appendix C-16 and Appendix K)

A study was made in conjunction with The Infantry School.

It was determined that:

(1) There is no requirement for a 2.36" repeating rocket launcher.

(2) It appears that the 3.5" repeating rocket launcher has a definite place in the antitank weapons family of the infantry regiment and that field tests of the 3.5" repeating rocket launcher T115 and 3.5" ammunition should be conducted in order to complete the antitank weapons picture.

6. Discussion:

Tests included in this report indicate that increased effective range can be obtained by a launcher fired from a stable platform similar to the 1917A1 machine gun tripod. The rate of fire per minute by the drum type repeating launcher is equal to or slightly exceeds that of the shoulder fired weapon. However, upon reloading, four rounds are immediately available to fire at a given target or engage a new target. The gunner has a second round immediately available with which he can adjust his fire more readily and accurately than with the shoulder fired weapon. Actually four rounds can be fired from a filled repeating launcher in about the same time one can be fired from the shoulder fired weapon.

A launcher and rocket capable of being fired without the use of contact wires should materially speed up the process of loading with the resultant increase in rate of fire. Elimination of contact wires would also eliminate the possibility of firing more than one rocket at one pull of the trigger.

Any repeating rocket launcher that warrants consideration of inclusion in the Infantry Regiment must fire rockets capable of defeating armor of any class. Neither the 2.36" standard rocket nor the development type rocket, T59E3, is considered capable of such accomplishment. This precludes further consideration of a 2.36" repeating launcher.

The 3.5" rocket has the desired penetrative ability. Increased range and accuracy is expected in future development. The tests of the 2.36" repeating launcher are sufficiently conclusive to warrant a service test of the 3.5" repeating launcher to determine if there is a requirement, in the Infantry Regiment, for a repeating launcher, of 3.5" caliber and the recommended design therefor.

7. Conclusions:

a. That there is no requirement for a 2.36" repeating rocket launcher in the Infantry Regiment.

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b. That tests with the Launcher, Rocket, Repeating, 2.36", T112, by indicating increased accuracy and increased initial rate of fire, have been sufficiently conclusive to warrant service test of the T115, 3.5" repeating launcher, with a view to determining its capabilities and its possible place in the Infantry Regiment.

8. Recommendations:

a. That the Launcher, Rocket, Repeating, 3.5", T115, be submitted to this Board for service test to determine its capabilities and whether there is a requirement for a weapon of this or a similar design in the Infantry Regiment.

b. That no further consideration be given to the development of a 2.36" repeating launcher for use in the Infantry Regiment.

Burton L. Lucas
BURTON L. LUCAS
Colonel, Infantry
President

1 Incl - Coordination
and
Appendices
A - Copy of Directive
B - Characteristics
C - Details of Tests
D - Analysis of Test Results (Omitted)
E - Deficiencies and Suggested Modifications
F - Photographs
G - Drawing
H - Service Test Questionnaire (Omitted)
I - Training Aids
J - Infantry School Letter

COORDINATION

1. The proposed Board action was circulated to the following agencies who concurred or had no comment:

a. The Infantry School

b. The Artillery School

c. The Armored School

d. Army Field Forces Board No. 1

e. Army Field Forces Board No. 2

f. Army Field Forces Board No. 4

g. The Marine Corps Equipment Board

2. The British War Office commented as follows:

"The recommendations are agreed in that we can see no requirement for this Repeating Launcher for the following reasons:

a. Calibre is too small;

b. The rate of fire does not appear to be significantly higher than that of the M.18;

c. The percentage of hits are greater, but had the M.18 been mounted on a tripod it is possible that it would have been equally accurate;

d. The T.112 is at a great disadvantage compared with the M.18 on the question of weight."

Discussion:

No comment.

3. The Canadian Army commented as follows:

"1. The Canadian Army concurs with the conclusions and recommendations made by AFF Board No. 3 in respect to the weapon which underwent tests.

2. It is to be recognized that considerable advantages could be achieved in the way of quick hits on the target if a second round was immediately available for firing with observed corrections, providing that the firer's initial aim was not too violently disturbed by the manipulation of the self-repeating mechanism. This is particularily so with the type of sight (reflector) as used with this equipment, as it is necessary to visually estimate range. It is possible that a repeating mechanism,

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as used in the aircraft launcher of the German R4M Rocket, would provide a simple and smooth working solution for a two shot rocket launcher. A two shot solution may be more logical in respect to a man-portable 3.5 inch rocket launcher."

Discussion:

No comment.

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APPENDIX A - COPY OF DIRECTIVE

APPENDIX B - CHARACTERISTICS

APPENDIX C - DETAILS OF TESTS

Test No. 1 - Crew requirements for operation of Launcher, Rocket, Repeating, 2.36", T112 (Drum Type), both ground and vehicular mounted.

Test No. 2 - Ease and speed of mounting Launcher, Rocket, Repeating, 2.36", T112 (Drum Type).

Test No. 3 - To determine if Launcher, Rocket, Repeating, 2.36", T112 (Drum Type), can be transported by hand.

Test No. 4 - To determine if Launcher, Rocket, Repeating, 2.36", T112 (Drum Type), can be transported on and fired from 1/4 ton 4x4 vehicle.

Test No. 5 - Functioning of Launcher, Rocket, Repeating, 2.36", T112 (Drum Type).

Test No. 6 - Comparative accuracy of Launcher, Repeating, 2.36", T112 (Drum Type), and Launcher, Rocket, 2.36", M18.

Test No. 7 - Percentage of hits on a moving tank target when firing the Launcher, Rocket, Repeating, 2.36", T112 (Drum Type).

Test No. 8 - Rate of fire for first minute of the Launcher, Rocket, Repeating, 2.36", T112 (Drum Type).

Test No. 9 - Stability of Launcher, Rocket, Repeating, 2.36", T112 (Drum Type).

Test No. 10 - Time and number rounds required to obtain hits on stationary target at ranges unknown to gun crew when firing Launcher, Rocket, Repeating, 2.36", T112 (Drum Type).

Test No. 11 - Type of emplacement required for the Launcher, Rocket, Repeating, 2.36", T112 (Drum Type), in a defensive position.

Test No. 12 - Ability of Launcher, Rocket, Repeating, 2.36", T112 (Drum Type), to withstand an air drop.

Test No. 13 - Safety procedures for crew personnel of the Launcher, Rocket, Repeating, 2.36", T112 (Drum Type).

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Test No. 14 - Durability of Launcher, Rocket, Repeating, 2.36", T112 (Drum Type), under normal field conditions and at temperatures of +120°F and -40°F.

Test No. 15 - Ability of the Launcher, Rocket, Repeating, 2.36", T112 (Drum Type), to function after being subjected to adverse conditions.

Test No. 16 - To determine if there is a requirement for the Launcher, Rocket, Repeating, 2.36", T112 (Drum Type), or the Launcher, Rocket, Repeating, 3.5", T115 (Clip Type).

APPENDIX D - ANALYSIS OF TEST RESULTS (Omitted)

APPENDIX E - DEFICIENCIES AND SUGGESTED MODIFICATIONS

APPENDIX F - PHOTOGRAPHS

APPENDIX G - DRAWING

APPENDIX H - SERVICE TEST QUESTIONNAIRE (Omitted)

APPENDIX I - TRAINING AIDS

APPENDIX J - INFANTRY SCHOOL LETTER

ARMY FIELD FORCES BOARD NO. 3
Fort Benning, Georgia

APPENDIX A - COPY OF DIRECTIVE

REPORT OF TEST - PROJECT NO. 3288

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OFFICE, CHIEF, ARMY FIELD FORCES
Fort Monroe, Virginia

ATIEV-11 471 (GL) 29 Sep 1949

SUBJECT: Launcher, Rocket, Repeating, 2.36 inch (Drum Type)

TO: Director of Logistics
General Staff, United States Army
Washington 25, D. C.
Attention: Research and Development Group

1. Reference is made to:

a. Department of the Army Project No. 517-05-009 (TS4-4007).

b. Department of the Army Project No. 517-05-012 (TS4-4019).

2. It is the understanding of this Office that engineering tests on the Launcher, Rocket, Repeating, 2.36 inch, T112 Drum Type (reference 1a above) have been completed but that the five (5) pilot models are being held pending completion of engineering tests on the Launcher, Rocket, Repeating, 3.5 inch, T115 Clip Type (reference 1b above). It is further understood that engineering tests on the 3.5 inch launcher are being delayed for lack of ammunition which may not be available for several months.

3. This Office is desirous of determining whether there is a requirement for repeating launchers of any type within a Field Army. It is believed much of the desired information can be obtained with the 2.36 pending availability of the 3.5 and its ammunition. Additional data could then be obtained when the latter is ready for user tests.

4. It is therefore requested that:

a. The five (5) pilot models of the Launcher, Rocket, Repeating, 2.36 inch T112 (Drum Type), and the following ammunition be shipped to or made available to Army Field Forces Board No. 3 for test:

700 rounds - Rocket, Practice, M7A6
200 rounds - Rocket, Practice, T60E3

b. As soon as engineering tests on the Launcher, Rocket, Repeating, 3.5 inch, T115 (Clip Type) have been completed this Office be notified.

FOR THE CHIEF, ARMY FIELD FORCES:

COPY FURNISHED:
President, AFF Bd No. 3

/s/t/ Neil M. Matzger
Lt Col AGD.
Asst.Adj. Gen.

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SUBJECT: Launcher, Rocket, Repeating, 2.36 Inch (Drum Type)

CSGLD/F3 - 48015 (29 Sep 49) 1st Ind

Logistics Division, General Staff, U. S. Army, Washington 25, D. C.

TO: Chief of Ordnance

For necessary action to implement the request contained in paragraph 4, basic letter.

FOR THE DIRECTOR OF LOGISTICS:

/s/t/ James S. Willis
Colonel, GSC
Chief, Development Group
Research & Development Group

Cy furnished:
Wash Dep, Dev Sec, AFF

RECORD

O.O. 471.94/4685 2d Ind
ATTN: ORDTS
ATDEV-11 471 (GM)

Dept Army, Ord O

TO: Director, Logistics Division, GSUSA

1. Instructions have been issued for a shipment to the President, Army Field Forces Board No. 3, Fort Benning, Georgia, of five Launchers, Rocket, Repeating 2.36", T112 and 700 Rockets, Practice, M7A6. The Rockets, Practice, T60E3 are still in the development stage and are not available for shipment at this time.

2. The Chief, Army Field Forces will be notified as soon as engineering tests on the Launcher, Rocket, Repeating, 3.5", T115 (clip type) have been completed.

FOR THE CHIEF OF ORDNANCE:

/s/t/ H. B. Sayler
Maj Gen, Ord Dept
Chief, Ord Res & Dev Div

Cy furnished:
Wash Dep, Dev Sec, AFF

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SUBJECT: Launcher, Rocket, Repeating, 2.36 Inch (Drum Type)

CSGLD/F3 - 55021 (29 Sep 49) 3d Ind 18 Nov 1949

Logistics Division, General Staff, U. S. Army, Washington 25, D. C.

TO: Chief, Army Field Forces, Fort Monroe, Virginia

Attention is invited to preceding 2d Indorsement.

FOR THE DIRECTOR OF LOGISTICS:

/s/t/ James S. Willis
Colonel, GSC
Chief, Development Branch
Research and Development Grou

Copy furnished:
Wash Dep, Dev Sec, AFF

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ATDEV-11 471 (GM)(29 Sep 49) 4th Ind
Subj: Launcher, Rocket, Repeating, 2.36 Inch (Drum Type)

Office, Chief, Army Field Forces, Fort Monroe, Virginia 6 Dec 1949

TO: President, Army Field Forces Board No. 3, Fort Benning, Georgia

1. Attention is invited to basic letter and to 2d Indorsement herewith.

2. It is requested that upon receipt of the five (5) models of the Launcher, Rocket, Repeating, 2.36 inch, T112 (Drum Type), and ammunition therefor your Board in coordination with other interested agencies conduct such test as may be necessary:

a. To determine if there is a requirement for this size repeating launcher.

b. To determine if the T112 Repeating Launcher meets this requirement, and

c. To determine if there is a requirement for a 3.5 inch repeating launcher or, at least, a sufficient possibility of a requirement to warrant test of the T115 Launcher.

3. In case the answer to 2c above is in the affirmative the Launchers, Rocket, Repeating, 3.5 inch T115 (Clip Type) can be obtained and made a part of this test if desired.

4. This project is assigned Priority "C".

5. The report will be made in twenty-three (23) copies.

FOR THE CHIEF, ARMY FIELD FORCES:

/s/t/ Neil M. Matzger
Lt Col AGD.
Asst Adj Gen

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British JSM (Army Staff) (Dup)
Canadian Army Staff

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ARMY FIELD FORCES BOARD NO. 3
Fort Benning, Georgia

APPENDIX B - CHARACTERISTICS SHEET

REPORT OF TEST - PROJECT NO. 2288

APPENDIX B

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APPENDIX B

1. General:

a. The Launcher, Rocket, Repeating, 2.36", T112 (Drum Type) is capable of launching a maximum of four type T59E3, M7A3, or M7A3 modified rockets at a rate of fire governed by the speed of hand operation.

b. Rocket ammunition is loaded by hand into the four separate chambers of the drum, and fired electrically by current provided in a combination trigger and hand generator. The drum is rotated by hand operation of a lever. The launcher can not be fired until the firing chamber is indexed to the barrel and latched in place. This indexing and latching is positive and automatic as long as ammunition remains in the drum.

c. The launcher is designed to be fired from the Mount, Tripod, MG, Caliber .30, M1917A1.

2. Detailed Description:

a. The principal components of the mechanism are:

(1) The body assembly which includes the body casting and all actuating mechanisms.

(2) The barrel assembly.

b. The Body Assembly consists of:

(1) The Body Casting which is manufactured of aluminum alloy and is machined on the outside of the front mounting lug and inside surfaces of the rear mounting lug. These lugs are bored to agree with the attaching bolts of the M1917A1 tripod. Two front pads are machined to fit the radius of the barrel extension and clamps. (Appendix F-8)

(2) The Drum Assembly is composed of four firing chambers, the rear support, the contact pin and rocket detent housing assembly, the front support, and ratchet and chamber buffer rings. The firing chambers are welded to the supports. The front and rear bushings are pressed in place and the ratchet is held in the front support with drive fit pins. A steel plate, machined in four places to accommodate the drum detent is riveted to the rear support. The contact pin and rocket detent housing assembly is retained by two supports which are attached to each firing chamber. The buffer rings are riveted to the front of each chamber. Individual firing chambers are wound with .047 diameter

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music wire for protection of personnel. (Appendix F-7)

(3) Contact and Detent Housing Assembly is composed of a housing, detents, detent spring, detent pivot bolts and nut, contact bushing, spring, contact pin, collar, and bushing. The housing assembly fastens to the supports by the pivot bolt and two screws. (Appendix F-7)

(4) The Drum Indexing and Latching Mechanism is composed of a release arm, release arm pivot, return spring, spacers and pivot pin, release arm buffer, latch and latch pin, latch return spring, and cover. The release arm pivot and buffer are permanently attached to the body casting. The release arm can be pivoted by depressing that part of the arm which extends beyond the cover in order to disengage the latch. (Appendix F-4)

(5) The Barrel Extension Assembly is composed of the barrel coupling nut, the generator and trigger guard, the obturating sleeve guides. The barrel extension is held in place by two barrel extension clamps. The obturating sleeve fits over the aft end of the barrel extension and is slotted to fit the sleeve guides. The sleeve camming pin is brazed in place and the sleeve is bored to mate with the front chamber buffer rings. The sleeve cover is retained by clamps to the sleeve and barrel extension. (Appendix F-8)

(6) The Safety Switch, the switch and switch mounting bracket are located on the body casting so that the plunger on the switch will be actuated by the obturating sleeve.

(7) The Hub Assembly, which is composed of the hub, which has camming surfaces milled in the peripher to actuate the obturating sleeve and a splined shaft engaged by the operating link. On the aft face are located the pawl, pawl stop, pawl return spring, and return spring anchor pins. The closure is fastened to the hub assembly and acts as a seal to prevent extraneous material from fouling the ratchet and pawl. A flexible seal on the closure bears against the front drum support to effect the sealing action, the operating lever pivots on the fulcrum and fulcrum pin, which are assembled before being attached to the front support of the body casting. The operating lever is retained on the fulcrum pin by a standard snap ring and washer. (Appendix F-9)

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(8) Operating Mechanism, which consists of the operating lever, with its pivot bushing and actuating pin and roller retained by a standard snap ring; operating link, which engaged the splined shaft of the hub, and the operating lever stop and buffer. (Appendix F-10)

(9) Contactor Assembly, which is composed of the body, contactor spring screw and lock-nuts and body attaching screws. Current is carried to the contactor through the covered lead wire.

(10) Sight Mounting Bracket, the sight bracket is attached to the body casting by six screws. (Appendix F-3)

(11) Drum Detent, the rear support of the body casting is bored to accommodate the drum detent spring and plug. A steel bushing is pressed in the aluminum casting to provide a hard wearing surface for the detent pin.

c. Front Barrel Assembly. The front barrel assembly is composed of the barrel tube muzzle deflector and barrel coupling screw. The muzzle deflector is attached to the barrel by four screws and the barrel coupling screw by nine screws. (Appendix F-1)

3. Method of Operation:

a. Loading

(1) In order to initiate loading the operating lever must first be moved approximately 15° to the right. This opens the obturating sleeve and frees the drum. The trigger safety is moved to safe.

(2) Ammunition is loaded from the rear always loading the chamber which is on top. Rockets are pushed into the chamber with the flat of the hand until the detent engages the groove in tail of the rocket.

(3) The drum is then rotated by hand and the above procedure repeated until four rounds have been loaded. The drum will automatically lock in the indexed position when the last chamber revolves into the loading position.

(4) In the event that M7A3 ammunition is being fired, the squib wires will have to be wrapped around the contact posts.

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b. Firing

(1) To begin the firing cycle close the operating lever against the buffer. This closes the obturating sleeve over the firing chamber and positively indexes the firing chambers and barrel. At the same time the sleeve releases the plunger of the safety switch and closes the circuit from the trigger to the contact.

(2) Move the trigger safety to the fire position and squeeze the trigger, firing the rocket.

(3) After the first round is fired the operating lever is moved to the right until the second chamber is latched. The operating lever is returned and the firing operation is repeated.

(4) The above operation is repeated until all four rounds have been fired.

c. Misfires

In the event of a misfire, the following procedure is used:

(1) Move the operating lever far enough to release the obturating sleeve.

(2) Depress the release arm until the firing chamber detent is unlatched.

(3) Move the lever and release the latch release arm to index the next round. The misfired round may be pushed through the chamber and disposed of.

4. Physical Characteristics:

a. Weight.

(1) Launcher, complete - 41 pounds.

(2) Caliber .30, M1917A1 tripod - 52 pounds.

b. Weight of launcher sub-assemblies.

(1) Body assembly - 16 pounds.

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(2) Barrel and barrel extension - 6 pounds.

(3) Drum assembly - 19 pounds.

c. Dimensions of launcher (without tripod).

(1) Overall length - 74 3/4 inches.

(2) Overall width - 14 5/8 inches.

(3) Overall height - 14 1/8 inches.

(4) Length of tube - 72 inches.

(Appendices F-1 through 10)

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APPENDIX C - DETAILS OF TESTS

REPORT OF TEST - PROJECT NO. 2288

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Test No. 1

1. Purpose: To determine the crew requirements for operation of the Launcher, Rocket, Repeating, 2.36", T112 (Drum Type), both ground and vehicular mounted.

2. Method: The device was put into action and fired from both the Mount, Tripod, MG, Caliber .30, M1917A1, the Mount, Tripod, Lt. Wt., Caliber .30, T113E1, and from a vehicular machine gun mount on a 1/4 ton vehicle.

3. Results:

a. Crew requirements for firing from ground mount: When ammunition was on the firing position two men were required to put the device into action and fire it from either type of ground mount. However three men were much more desirable. No. 1 man the gunner, No. 2 man the loader and assistant gunner, No. man ammunition bearer, who broke open the ammunition and handed it to the loader. This procedure reduced the firing time considerably and made a better operating team.

b. Crew requirement for firing from vehicular mount: Two men were required to put the device into action and fire from a vehicular machine gun mount, however three men were much more desirable, the third man breaking the ammunition open and handing it to the loader which decreased the time.

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Test No. 2

1. Purpose: To determine the ease and speed of mounting the Launcher, Rocket, Repeating, 2.36", T112 (Drum Type).

2. Method:

a. The device was mounted on both the Mount, Tripod, MG, Caliber .30 M1917A1, and the vehicular machine gun mount five times.. The loading of four rounds being simulated.

b. The ease of operation and the average time required (both mounted and dismounted) were recorded.

3. Results:

a. The time required and the average times for five trials, using a three man crew both mounted and dismounted were as follows:

	M1917A1 Mount	Vehicular Machine Gun Mount
1.	1' 15"	41"
2.	58"	39"
3.	50"	43"
4.	54"	37"
5.	46"	38"
Average	57 seconds	40 seconds

Note: With the vehicular machine gun mount there was no tripod to be set up.

b. The device was very easy to mount and no difficulties were encountered in putting the launcher into action either on the ground or on the vehicular machine gun mount.

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Test No. 3

1. Purpose: To determine if the Launcher, Rocket, Repeating, 2.36", T112 (Drum Type), can be transported by hand.

2. Method:

a. The T112 was hand carried while mounted on the Mount, Tripod, MG, Caliber .30, M1917A1, and on the Mount, Tripod, Lt. Wt., Caliber .30, T113E1.

b. While mounted on the Mount, Tripod, MG. Caliber .30, M1917A1, and on the Mount, Tripod, Lt. Wt., Caliber .30, T113E1, the device was displaced forward 50, 100, 150 and 200 yards. The difficulties encountered were noted.

c. The device with ammunition and mount was broken down into component parts and carried by the crew three miles across country and on unimproved roads. The most desirable crew, breakdown of components, and individual weight loads of crew members was ascertained.

3. Results:

a. No difficulties were encountered in hand carrying the T112 while mounted on either the Mount, Tripod, MG, Caliber .30, M1917A1, or the Mount, Tripod, Lt. Wt., Caliber .30, T113E1.

b. In displacing the T112 forward 50, 100, 150 and 200 yards using both types of tripods it was determined that for distances of 50 yards and under two men were adequate, each man holding one tripod leg with one hand and the trail leg with the other hand. (For distances over 50 yards three men were desirable for two men became fatigued and the time for displacement was excessive.) Each man in the three man carry picked up one tripod leg. No difficulties were encountered in displacing the launcher.

c. (1) The following was determined to be the most desirable crew, breakdown of components, and individual weight loads when armed with the Rocket 2.36", T59E3, of crew members when transporting the T112 by hand.

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Crew Members	Duty	Equipment	Approximate individual weight loads
No. 1	Gunner	2 rds of am (tripod minus cradle)	44.3 pounds
No. 2	Asst Gunner & Loader	Cradle and 2 rds am	34.3 pounds
No. 3	Crew Member	Launcher (minus muzzle section) with pintle	40.1 pounds
No. 4	Ammo Bearer	Muzzle section 6 rds am	40.9 pounds
No. 5	Ammo Bearer	6 rds am	38.4 pounds
Total Crew Five Men		Total Rds 36	Total weight 198 pounds

(2) When the lightweight tripod T113E1 was used in place of the M1917A1 tripod the above weight was reduced by approximately twenty eight pounds. No. 1 man carrying a total of 24.3 pounds and No. 2 man 26.3 pounds.

(3) No difficulties were encountered in carrying the T112 three miles across country with crew personnel and individual weight loads listed in (c) (1) and (2) above.

Test No. 4

1. Purpose: To determine if the Launcher, Rocket, Repeating; 2.36", T112 (Drum Type), can be transported on and fired from a 1/4 ton 4 x 4 vehicle.

2. Method:

a. The device was mounted and transported by 1/4 ton vehicle fifty miles across country and on unimproved roads.

b. The device was fired from a 1/4 ton vehicle.

c. The following was ascertained.

(1) Any damage to the device.

(2) Changes in firing procedure required.

(3) Safety procedures when firing while mounted.

3. Results:

a. No damage occurred to the T112 from being transported fifty miles across country and on unimproved roads while mounted on a vehicular machine gun mount on a 1/4 ton vehicle.

b. There were no changes in firing procedure required when firing the T112 from a vehicular machine gun mount on a 1/4 ton vehicle.

c. There were no difference in safety procedures when firing mounted from dismounted with the exception that the windshield on the 1/4 ton vehicle had to be latched down.

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Test No. 5

1. Purpose: To determine the functioning of the Launcher, Rocket, Repeating, 2.36", T112 (Drum Type).

2. Method:

a. This test was conducted concurrently with all firing tests.

b. Two launchers were loaded and fired a minimum of 500 times.

c. Two launchers were loaded with inert ammunition and repeating fire simulated for a minimum of 2000 cycles of the drum after which an attempt was made to fire a minimum of 100 rockets.

3. Results:

a. In loading practice rounds of M7A6 2.36" rockets it was difficult to engage the detent in the groove of the fin assembly. In loading it was necessary for the loader to put his palm over the end of the rocket to push it far enough into the chamber to engage the detent. The rockets frequently slipped forward past the groove of the assembly which necessitated pushing the rocket completely through the chamber and repeating the loading procedure.

b. Frequently rockets would not fire, this was determined to be caused by the exposed portion of the squib wire touching the body casting which caused a short circuit.

c. The generator which is enclosed in the trigger handle is of the same design as that in the Launcher, M18, and generates current when the trigger is released as well as when pulled. This resulted in the launcher firing a round unexpectedly in several instances especially during rapid fire and with inexperienced personnel as gunners.

d. In order to properly depress and elevate with the hand wheels of the M1917A1 tripod it was necessary to modify the body casting by cutting out a semicircular piece of metal so that the body casting would not hit the cradle of the tripod when depressing and elevating. (Appendix F-11)

e. In one instance two rockets fired simultaneously, this was caused by one squib wire touching another and when current was generated it caused both rounds to fire. Additional tests were conducted and it was determined that two rockets would also fire under the following conditions.

(1) When during loading the loader wrapped the squib wires of two rockets around either contact post of one chamber and current was generated.

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(2) When the launcher was loaded and the squib wires of previously fired rockets, that remained wrapped around contact posts, touched the squib wires of a rocket in another chamber and current was generated.

Three rounds could be fired simultaneously by touching squib wires together and it is believed four rounds could be fired simultaneously. No attempt was made to fire four chambers simultaneously because the operating handle is in front of one chamber.

f. The launcher could not be mounted on the Mount, Tripod, Lt. Wt., Caliber .30, T113E1, without modification of the launcher. The tips of the pintle mounting lugs had to be cut off approximately one fourth of an inch so that the holes in the pintle and mounting lugs would coincide and allow the pintle bolt to slip through and lock. (Appendix F-11)

g. Considerable difficulty was encountered with the obturating assembly during all firing and simulated firing. There is only one sleeve camming pin brazed on the obturating sleeve, when this pin engages the camming surfaces which are milled in the periphery of the hub assembly, it appears that the pressure is not equally distributed on the obturating sleeve which results in the sleeve canting making it difficult to close and open. When firing, powder particles work into the operating parts. These particles would become sticky thus preventing proper operation of the obturating sleeve.

Test No. 6

1. Purpose: To determine the comparative accuracy of the Launcher, Repeating, 2.36", T112 (Drum Type).

2. Method:

a. The Launcher, Rocket, 2.36", M18, was used as the comparative item. The M18 was also fired from the Tripod, MG, Caliber .30, M1917A1.

b. A ten round shot group was fired by each weapon at a 10 ft x 10 ft vertical panel at ranges of 100, 150, and 200 yards.

c. The maximum horizontal and the maximum vertical dispersion and the mean radii of the shot groups were computed and compared.

3. Results:

Range	Max. Horz. Disp.		Max. Vert. Disp.		Mean Radii	
Yards	T112	M18	T112	M18	T112	M18
100	25 in	38.5 in	37 in	35 in	11.9 in	17.35 in
150	50 in	67 in	22 in	34.5 in	15.5 in	22.65 in
200	37.5 in	58.5 in	37.5 in	54.5 in	17.45 in	21.15 in

b. The mean radii of the T112 was 5.45 inches less at 100 yards, 7.15 inches less at 150 yards, and 3.70 inches less at 200 yards than the M18.

c. The maximum hori zontal and vertical dispersion was less at all ranges with the T112 with the exception of the vertical dispersion at 100 yards where the M18 was 2 inches less.

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Test No. 7

1. Purpose: To determine the percentage of hits on a moving tank target when firing the Launcher, Rocket, Repeating, 2.36", T112 (Drum Type).

2. Method:

a. The Launcher, Rocket, 2.36", M18, was used as the comparative item in this test and was fired from the standing position.

b. The T112 was fired from the Mount, Tripod, MG, Caliber .30, M1917A1.

c. The speed of the tank was a constant 10 mph, however the speed and range of the tank was unknown to firing personnel. The tank run was broken down into two parts.

(1) The first run was on a straight course (head on with respect to the gunners) with the range decreasing from 200 yards to 50 yards. (Running time - 31 seconds)

(2) The second tank run was on a straight crossing course. The length of the tank run was 150 yards, the firing position was in the center and 100 yards from the target run. The firing range was between 100 - 125 yards. (Running tine - 31 seconds)

d. Five different gunners fired both the head on target run and the straight crossing run five times with both the T112 and the M18.

e. The number of rounds that the gunners could fire during the target runs was unlimited.

f. The number of rounds fired and the percentage of hits was recorded.

3. Results:

a. Ninety-five rounds were fired with the M18 and ninety-seven rounds with the T112 on Course No. 1. (Head on with respect to the gunner)

b. Ninety-five rounds were fired with the M18 and ninety-eight rounds with the T112 on Course No. 2. (Straight crossing course with respect to the gunner)

c. The overall percentage of hits on Course No. 1 with the M18 was 59% and with the T112, 66%. Approximately the same number of rounds were fired with each type launcher from 200 yards to 50 yards.

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d. The overall percentage of hits on Course No. 2 with the M18 was 62% and with the T112, 81%. Approximately the same number of rounds were fired with each type launcher from 125 yards to 100 yards.

Test No. 8

1. Purpose: To determine the rate of fire for the first minute of the Launcher, Rocket, Repeating, 2.36", T112 (Drum Type).

2. Method:

a. The Launcher, Rocket, 2.36", M18, was used as the comparative item in this test.

b. The launchers were loaded aimed and fired at a 9 ft. wide by 6 ft. high vertical target at 100 yards range as fast as possible for one minute by five different trained gun crews (3 men each). The devices were loaded before the time test began.

c. The time to fire the first four rounds with the T112, time required to reload the launchers, and the number of hits were recorded.

d. The T112 was fired from the M1917A1 tripod and the M18 was fired from the standing position.

3. Results:

a. T112

Crew No.	No. Rds. Fired	Hits	Time to Fire First 4 Rds	Time to Reload
1	8	8	5"	18"
2	8	7	8"	28"
3	10	10	5"	25"
4	12	12	4"	18"
5	10	10	6"	24"
Average	9.6 Rds	9.5	5.6"	22.6"

b. M18

Crew No.	No. Rds. Fired	Hits	Remarks
1	9	9	1. The time to aim and fire one round from the M18 was from two to three seconds.
2	10	10	
3	9	8	
4	9	9	
5	10	10	2. The time to reload one round into the M18 was from three to four seconds.
Average	9.4 Rds	9.2	

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c. In conducting this test the rockets were removed from their individual containers and stacked beside the gun position. Three men were used No. 1, the gunner, No. 2, the loader, and No. 3, the assistant loader, who handed the individual rockets to the loader.

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Test No. 10

1. Purpose: To determine the time and the number of rounds required to obtain hits on a stationary target at ranges unknown to the gun crew when firing the Launcher, Rocket, Repeating, 2.36", T112 (Drum Type).

2. Method:

a. The T112 was mounted on the M1917A1 tripod, with the cradle elevating and traversing clamps loosened.

b. The sight range indicator was set at either 0 or 600 yards which necessitated setting by the gunner of the estimated range to the target.

c. The launcher was loaded (4 rounds) and a fire order was given, at the command "commence firing" the timing was started.

d. Five 6 ft. by 6 ft. panel targets were placed in a semicircle, in relation to the rocket launcher, at ranges unknown to the gun crew. The ranges to the targets were measured after completion of the firing.

e. Eight four round groups were fired.

3. Results:

Group No.	Range	Time to Fire First Round	Time of First Hit	No. of Hits	Total Time to Fire 4 Rds
1	140 yds	12"	12"	3	24 sec
2	116 yds	9"	9"	4	14 sec
3	195 yds	11"	13"	3	18 sec
4	195 yds	12"	12"	3	23 sec
5	155 yds	9"	9"	4	22 sec
6	105 yds	9"	9"	4	25 sec
7	140 yds	9"	15"	3	25 sec
8	195 yds	15"	22"	3	30 sec
Average	154 yds	10.7"	12.5"	3.3/	22.6 sec

NOTE: Groups No. 3, 7 and 8 did not obtain a hit the first round fired.

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Test No. 11

1. Purpose: To determine the type of emplacement required for the Launcher, Rocket, Repeating, 2.36", T112 (Drum Type), in a defensive position.

2. Method:

a. With representatives of The Infantry School the most suitable type of defensive emplacement was determined.

b. The emplacement was constructed and photographed. The maximum elevation and range which could be safely fired from the emplacement was determined.

3. Results:

a. The most suitable position was determined to be a modified .30 caliber heavy machine gun emplacement. (Appendices G-1, F-12, 13 and 14). Two men were employed at the position; the gunner and the loader.

b. The maximum safe elevation was 300 mils, thus giving a range of approximately 400 yards. The launcher was fired from this elevation with no difficulty.

c. The launcher could be traversed and fired through 180° without danger to the gun crew. If necessity demanded the launcher could be traversed and fired through 360°.

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Test No. 12

1. Purpose: To determine the ability of the Launcher, Rocket, Repeating, 2.36", T112 (Drum Type), to withstand an air drop.

2. Method:

a. The T112 with a M1917A1 tripod was packed in an M-8 equipment container and dropped from a C-82 aircraft at a height of 1000 ft.

b. Immediately after the air drop the launcher was inspected, assembled and fired to ascertain damage resulting from the drop.

3. Results: The launcher functioned perfectly after the drop and no damage was done to either the launcher or the tripod.

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Test No. 13

1. Purpose: To determine safety procedures for crew personnel of the Launcher, Rocket, Repeating, 2.36", T112 (Drum Type).

2. Method:

a. This test was conducted concurrently with all firing tests.

b. The test officer observed all firing of the T112 determining the required safety procedures for crew personnel.

3. Results:

a. Other than normal safety procedures required the following were noted.

(1) Personnel should be taught proper trigger release after each individual round is fired. The trigger generates electricity upon release as well as when it is pulled. When the trigger is not released immediately after pulling and the chamber has been rotated a rocket will fire upon release of the trigger

(2) Personnel must be trained to check carefully when loading to prevent squib wires from touching each other. (Appendix F-5) All rockets connected to the trigger will be fired.

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Test No. 14

1. Purpose: To determine the durability of the Launcher, Rocket, Repeating, 2.36", T112 (Drum Type), under normal field conditions and at temperatures of +120°F and -40°F.

2. Method:

a. During the conduct of all tests the T112 was observed for any breakage.

b. The devices were cold and hot soaked for 72 hours at -40°F and +120°F, respectively, and fired immediately after removal from hot and cold rooms.

3. Results:

a. The following breakage was observed.

(1) Both obturating sleeve guides on one launcher broke off during the simulated repeating fire 2000 cycle test. This breakage was discovered after completion of the test when cleaning the launcher. This launcher had previously been fired 500 times.

(2) The operating handle of one launcher broke off before tests began. The launcher had just been assembled and was being examined.

(3) The operating handle of a second launcher broke off. This launcher had been fired 500 times, simulated repeating fire 2000 cycles, and an attempt was being made to fire it an additional 100 times. On the 20th round the operating handle broke. (Appendix F-10)

(4) One detent housing spring broke and had to be replaced. Approximately sixty rounds had been fired from this chamber when the spring broke.

b. Cold and hot soaking the launchers for 72 hours at -40°F and +120°F, respectively, had no effect on operation and functioning.

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Test No. 15

1. Purpose: To determine the ability of the Launcher, Rocket, Repeating, 2.36", T112 (Drum Type), to function after being subjected to adverse conditions.

2. Method:

a. Two launchers, T112 were subjected to the following:

(1) Sand was thrown into the working parts of the launcher and then brushed away by hand enough to permit loading and clearance for the rockets.

(2) The launchers were handled under wet muddy conditions, the launchers, particularly the working parts, were covered with mud.

(3) Dust was thrown into the working parts of the launchers and then brushed as clean as possible by the hands of the gunner.

(4) A launcher was soaked in a 5% solution of salt water for a period of four hours.

b. The launchers were fired after being subjected to the above conditions.

3. Results:

a. After sand was thrown into the working parts of the launcher, the obturating sleeve would not operate unless additional pressure was applied with the finger tips to open the sleeve. No other difficulties were encountered and all chambers fired properly.

b. Under wet muddy conditions and dust conditions the same difficulty was encountered as in a, above. The obturating sleeve assembly would not operate properly. The launchers fired properly under both conditions once the obturating sleeve had been closed and electrical circuit completed by release of the safety switch.

c. Soaking a launcher in a 5% salt water solution for 4 hours had no apparent effect as the launcher fired without difficulty after the soaking and no rust was observed.

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Test No. 16

1. Purpose: To determine if there is a requirement for the Launcher, Rocket, Repeating, 2.36", T112 (Drum Type), or the Launcher, Rocket, Repeating, 3.5", T115 (Clip Type).

2. Method: A study was made in conjunction with representatives of The Infantry School (See Appendix J) to determine whether a requirement exists for a weapon of this type; if so, in what units and the basis of issue.

3. Results:

It was determined that:

a. There is no requirement for a 2.36" repeating rocket launcher.

b. It appears that the 3.5" repeating rocket launcher has a definite place in the antitank weapons family of the infantry regiment and that field tests of the 3.5" Repeating Rocket Launcher, T115, and 3.5" ammunition should be conducted in order to complete the antitank weapons picture.

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Fort Benning, Georgia

APPENDIX E - DEFICIENCIES AND SUGGESTED MODIFICATIONS

REPORT OF TEST - PROJECT NO. 2288

APPENDIX E

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APPENDIX E: Deficiencies and Suggested Modifications

Deficiency	Results	Suggested Modification
1. No tool furnished to remove screws of detent housing assembly when changing detents.	Off set screw driver had to be fabricated locally.	Furnish a proper tool with each launcher.
2. Difficult to engage the detent in grooves of the rocket fin assembly.	Rockets slipped forward past the groove in the assembly and had to be reloaded.	Modify contact and tail latch assembly.
3. Body assembly hits the tripod cradle when elevating and depressing with the hand wheel of the M1917A1 Tripod.	Could not elevate and depress properly.	Modify body assembly.
4. Screw and nuts of detent housing assembly are exposed.	Operators frequently scratched hands.	Cover the screws and nuts or modify detent housing assembly.
5. Exposed parts of squib wire frequently touched body assembly.	Grounds the electrical circuit resulting in failure to fire.	Cover the squib wire so that only a very samll portion is exposed.
6. Obturating sleeve cants and sticks.	Difficult to close and open properly.	Modify obturating sleeve so that equal pressure is applied to circumference in closing and opening.
7. Operating handles are weak where they are joined to body assembly.	Two handles broke.	Make handle junction to body assembly much stronger, possibly with a nut and bolt.
8. Obturating sleeve is not covered properly.	Dust, sand, etc. get in operating parts and prevent proper functioning.	Modify cover.
9. Obturating sleeve guides are weak where brazed to sleeve.	Guides broke off.	Strengthen brazing.

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Launcher, Rocket, Repeating, 2.36", T112
(Drum Type)

Launcher with barrel disassembled.

1. Barrel extension assembly.

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Launcher, Rocket, Repeating, 2.36", T112
(Drum Type)

Launcher with barrel assembled.

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Launcher, Rocket, Repeating, 2.36", T112
(Drum Type)

Left side view of launcher mounted on
Cal. .30 Tripod, M1917A1.

1. Sight mounting bracket.

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Launcher, Rocket, Repeating, 2.36", T112
(Drum Type)

Three quarter left rear view of launcher and Cal. .30 Tripod M1917A1.

1. Drum indexing and latching assembly.

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Launcher, Rocket, Repeating, 2.36", T112
(Drum Type)

Live wires from rockets M7A6 in contact around contact post.

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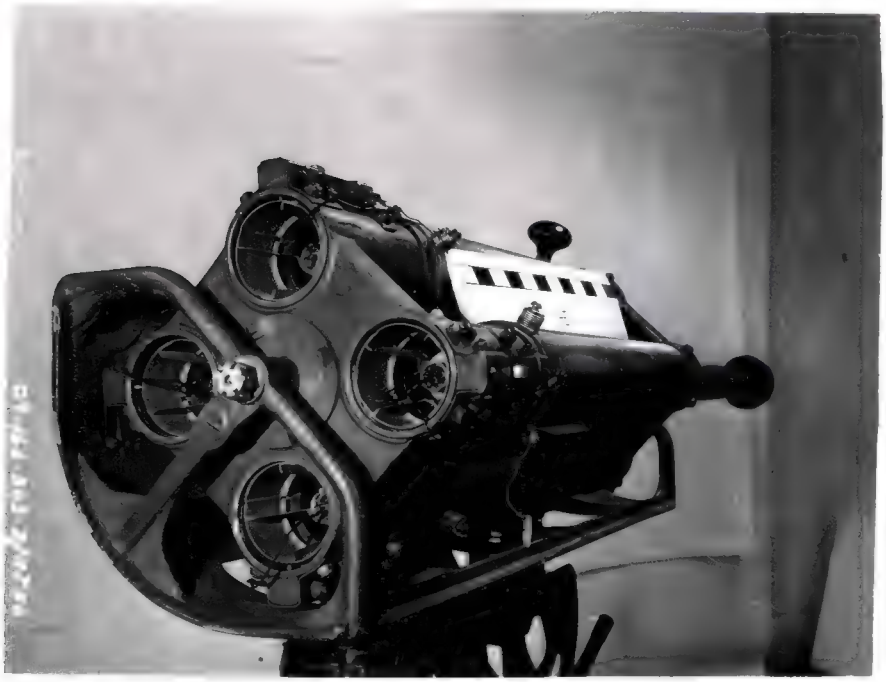

Launcher, Rocket, Repeating, 2.36", T112
(Drum Type)

Rear view showing four rockets loaded in chambers with live wires from M7A6 rockets in contact around contact posts.

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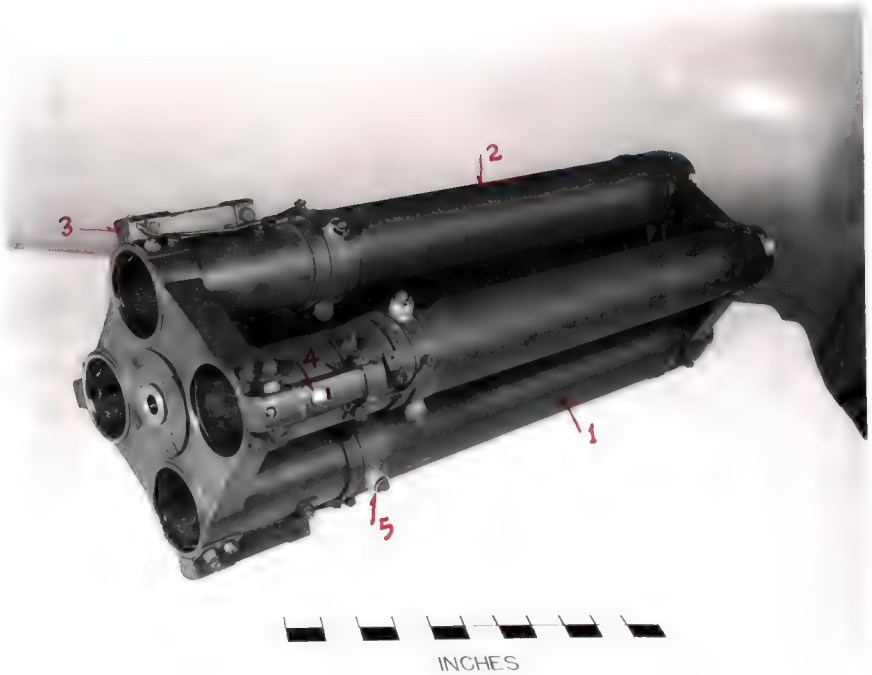

Launcher, Rocket, Repeating, 2.36", T112
(Drum Type)

1. Drum assembly
2. Chambers wrapped with .047 diameter music wire
3. Contact pin and rocket detent housing assembly
4. Detent
5. Contact post

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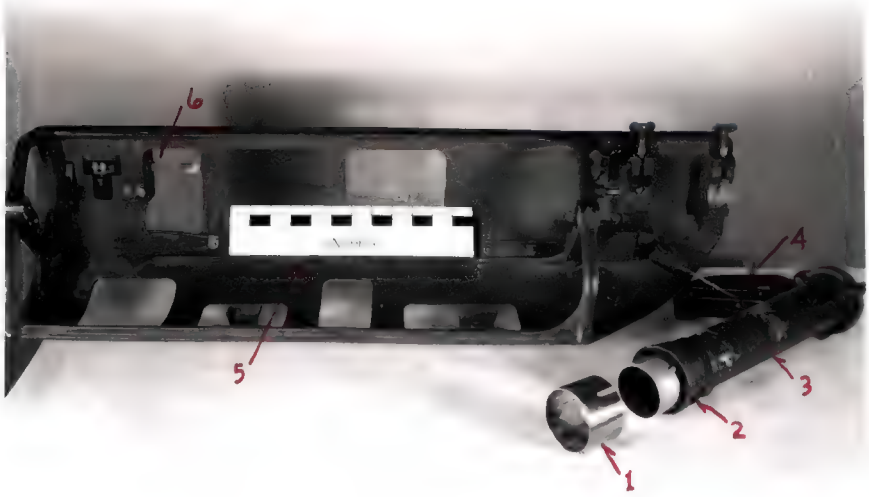

Launcher, Rocket, Repeating, 2.36", T112
(Drum Type)

1. Obturating sleeve
2. Obturating sleeve cover
3. Barrel extension assembly
4. Generator and tripper guard assembly
5. Launcher body assembly
6. Release arm of the drum indexing and latching mechanism

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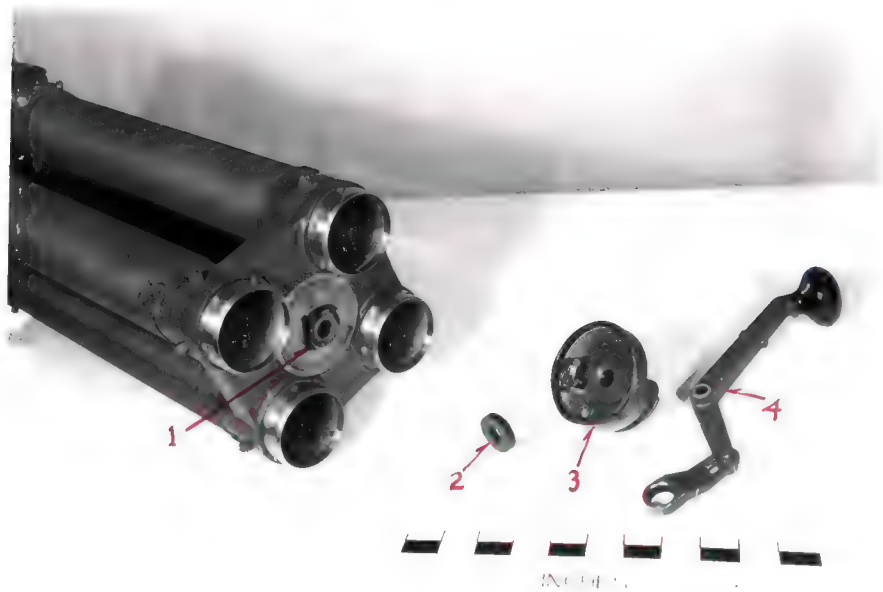

Launcher, Rocket, Repeating, 2.36", T112
(Drum Type)

1. Ratchet, assembled to hub
2. Fiber spacer
3. Ratchet hub assembly
4. Ratchet operating lever assembly and operating link.

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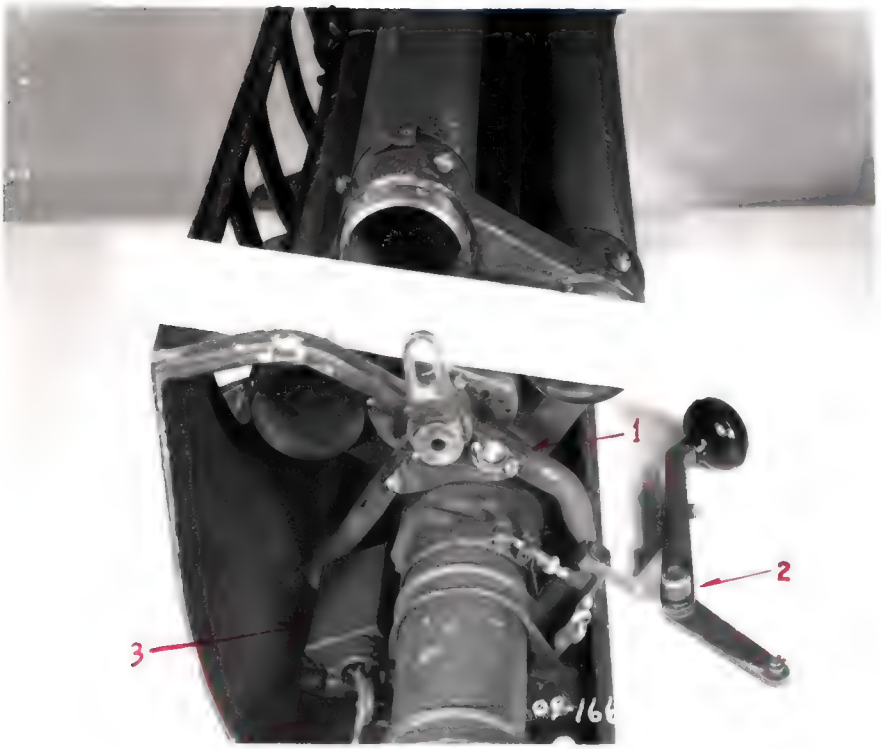

Launcher, Rocket, Repeating, 2.36", T112
(Drum Type)

1. Broken opening for pivot bushing.

2. Operating lever and link, note broken pivot bushing.

3. Safety switch.

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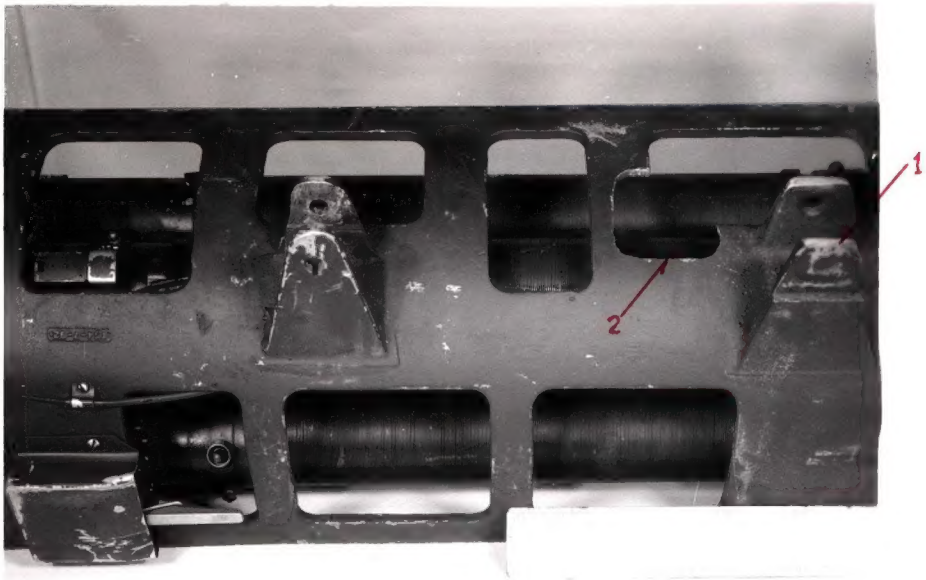

Launcher, Rocket, Repeating, 2.36", T112
(Drum Type)

1. Pintle mounting legs modified to properly fit the Mount, Tripod, Lt Wt., Caliber .30, T113E1.

2. Body casting modified in order to properly elevate and depress with the hand wheels of the Mount, Tripod, Caliber .30 M1917A1.

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Launcher, Rocket, Repeating, 2.36", T112
(Drum Type)

Defensive position front view showing gunner and loader.

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Launcher, Rocket, Repeating, 2.36", T112
(Drum Type)

Defensive position rear view.

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Launcher, Rocket, Repeating, 2.36", T112
(Drum Type)

Defensive position right rear view.

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